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REMARKS

Claims 1 – 12 and 14 - 17 are pending in the present application. Reconsideration and allowance of the claims is respectfully requested in view of the above amendments and the following remarks.

Claim Rejections Under 35 U.S.C. §103(a)

Claims 1 – 12 and 14 – 17 are rejected under 35 U.S.C. 103(a) as being allegedly unpatentable over U.S. Patent No. 5,663,280 to Ogoe et al. ("Ogoe"), U.S. Patent No. 5,041,479 to Ogoe ("Ogoe '479") or U.S. Patent No. 5,399,600 to Buysch et al. ("Buysch") in view of U.S. patent No. 4,130,530 to Mark et al. ("Mark") (Paper 17, page 2).

In making the rejection the Examiner states

It would have been obvious to one having ordinary skill in the art, at the time the invention was made, to add the cyclic siloxane of Marks et al. to the composition of the primary references, in order to depress the melt viscosity without lowering the impact strength.

(Paper 17, page 2). Applicants respectfully disagree with the rejection.

Mark teaches a plasticized polycarbonate composition comprising high molecular weight aromatic carbonate polymer and a minor amount of a cyclic siloxane plasticizer (See Abstract). Mark teaches that the cyclic siloxane plasticizers are added to polycarbonates to maintain impact strength and improve melt flow (see Example I). Applicants' disagree with the rejection on the grounds that the Examiner has not made a *prima facie* case of obviousness over Ogoe, Ogoe '479 or Buysch in view of Mark.

For an obviousness rejection to be proper, the Examiner must meet the burden of establishing a *prima facie* case of obviousness, i.e., that all elements of the invention are disclosed in the prior art; that the prior art relied upon, coupled with knowledge generally available in the art at the time of the invention, contain some suggestion or incentive that would have motivated the skilled artisan to modify a reference or combined references; and that the proposed modification of the prior art had a reasonable expectation of success, determined from the vantage point of the skilled artisan at the time the invention was made. *In re Fine*, 5 U.S.P.Q.2d 1596, 1598 (Fed. Cir. 1988); *In Re Wilson*, 165 U.S.P.Q. 494, 496

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(C.C.P.A. 1970); *Amgen v. Chugai Pharmaceuticals Co.*, 927 U.S.P.Q.2d, 1016, 1023 (Fed. Cir. 1996).

Ogoe '280 teaches a carbonate polymer composition comprising a carbonate polymer, a low volatility aromatic phosphate ester compound, and optionally an alkali metal salt having a pH of at least 7 (see Abstract). While Ogoe '280 teaches the optional use of alkali metal salts in conjunction with aromatic phosphate ester compounds in polycarbonate resins, it does not teach polycarbonate resins comprising the flame retardant salts and the cyclic siloxane as presently claimed.

Ogoe '479 discloses making a concentrate by pelletizing a carbonate polymer comprising one or more additives selected from the group consisting of a metal salt, a halogenated aromatic compound, a metal salt of an inorganic compound, a free aromatic sulfimide and a fibril forming polytetrafluoroethylene (see Claim 1). Ogoe '479, like Ogoe '280 does not teach blending a cyclic siloxane with a concentrate comprising a polycarbonate resin and a flame retardant salt, as presently claimed.

Buysch teaches blends of polycarbonate with triphenylphosphane sulphonates and optionally fluorinated polyolefins (see Abstract). Buysch, like Ogoe '479 and Ogoe '280 does not teach a method for making a flame resistant composition wherein a flame retardant salt and cyclic siloxane are blended with a polycarbonate resin as presently claimed.

The Examiner has asserted that the motivation for adding the cyclic siloxane of Mark to the flame resistant compositions is to reduce melt viscosity (Paper 17, page 2). The Applicants respectfully disagree and believe that there is no such motivation to do so on the grounds that the cyclic siloxane by itself is detrimental to the flame retardant properties of polycarbonates, especially when the polycarbonate is not combined with a flame retardant salt. Since a cyclic siloxane by itself does not in any way improve the flame retardant properties of polycarbonate, one of ordinary skill in the art would not be motivated to add it to a desired flame retardant composition, but upon choosing to do so would be surprised at the unexpectedly superior flame retardant properties achieved as a result of this combination.

Evidence of this may be seen in U.S. Patent No. 6,353,046 to Rosenquist et al. ("Rosenquist") submitted to the U.S. Patent Office along with the amendment dated October 25, 2002. Rosenquist teaches compositions comprising a perfluoralkane sulfonate and a

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cyclic siloxane (see Abstract). Rosenquist details compositions containing a cyclic siloxane without any of the flame retardant salt (see the last two samples in Table 2B). The samples showed little or any flame retardant properties as indicated by the 'nd' (not determinable) values shown for the UL94 flame retardancy characteristics (see Table 2B; see also Col. 4, lines 14 - 16). Additionally, the drip performance for these two samples (7 out of 10 and 5 out of 5) is high, which is undesirable for a flame retardant composition.

The flame retardancy characteristics in Rosenquist were evaluated by testing 20 bars using the Underwriters Laboratories UL94 methodology. In order for a composition to display maximum flame retardant performance in a UL94 test, the probability of a first time pass of p(FTP) should be as close to 1 as possible (Col. 3, lines 41 - 52). That the UL94 p(FTP) values could not even be determined is an indication of how the flame retardancy characteristics of a polycarbonate composition containing only the cyclic siloxane are diminished. One of ordinary skill in the art would therefore not be motivated to manufacture a flame retardant composition by combining the cyclic siloxane with a polycarbonate containing a flame retardant salt, since it would be expected that such a composition would display inferior flame retardant properties when compared with a polycarbonate composition that contained the flame retardant salt but was devoid of the cyclic siloxane.

Additional data shown in the declaration in Table 1 (also submitted to the U.S. Patent Office with the amendment dated October 25, 2002) where a polycarbonate resin was compounded with 0.08 parts per hundred (phr) of the flame retardant salt and a cyclic siloxane in amounts of 0.05, 0.1, 0.25, 0.5, 1 and 2 phr respectively also demonstrate that while the cyclic siloxane may improve the flow properties of the blend, there is a decrease in other desirable properties such as the softening temperature of the composition when subjected to heat as measured by heat distortion temperature (HDT) method or the Vicat test. From Table 1 it can be seen that the composition having 0.05 phr of cyclic siloxane has a HDT softening temperature of 127.4°C, while the composition having 2 phr of cyclic siloxane has a HDT value of 123.2°C. Similarly, it can be seen that the Vicat temperature, which also measures the softening temperature of a composition decreases from 142.9°C to 139°C. It is generally desirable to have as high a value as possible for the softening temperature of a given composition, especially if the composition is to be utilized as a flame

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retardant composition. Thus, while the cyclic siloxane reduces the melt viscosity, it acts in an adverse manner to reduce the value of other desirable properties such as the softening temperature of the composition. Therefore despite the Examiner's contention that there is motivation to combine the teachings of Ogoe, Ogoe'479 and Buysch in view of Mark to reduce the melt viscosity, there are teachings in Rosenquist as well as observations from the declaration, that would dissuade one of ordinary skill in the art from making such a combination.

Further, based upon the results from Rosenquist discussed above, where the sole addition of a cyclic siloxane does not improve the flame retardant properties of polycarbonate resin, one of ordinary skill in the art would further anticipate that the addition of a cyclic siloxane to a polycarbonate composition comprising a flame retardant salt would not improve the flame retardancy when compared with a polycarbonate composition containing only a flame retardant salt and no cyclic siloxane. However, this appears not to be the case either. A comparison of the results of Table 1A with those of Table 1B in Rosenquist, clearly shows that the addition of potassium perfluorobutane sulfonate (KPFBS) salt to a polycarbonate in quantities of 0.05, 0.06 and 0.07 phr shows values of p(FTP) of less than 0.2, while the addition of 0.1 phr of siloxane to the same compositions increases the p(FTP) value to above 0.5 for a composition containing 0.05 phr of KPFBS, while for the compositions containing 0.07 phr of KPFBS, the p(FTP) value is greater than 0.99. Similar results can be seen in Table 2A. This clearly indicates that a synergy exists between the flame retardant salt and the cyclic siloxane when added to the polycarbonate.

Thus, one of ordinary skill in the art, upon being aware of the detrimental flame retardant properties of a cyclic siloxane would therefore not be motivated to add it to a desired flame retardant composition, but upon deliberately choosing to do so, would be surprised at the unexpectedly superior flame retardant properties achieved as a result of the combination.

The present application, in contrast with that of Rosenquist, claims first making a concentrate of a polycarbonate with the flame retardant salt, and then adding to the concentrate the cyclic siloxane and additional polycarbonate. Rosenquist does not teach or disclose making concentrates or masterbatches. In attempting to prove that results obtained

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by combining the a concentrate containing flame retardant salts and polycarbonate with a cyclic siloxane and additional polycarbonate are unobvious over Ogoe, Ogoe '479 or Buysch in view of Mark, the Applicants would like to compare results from the present application with those of Rosenquist, where the concentrate approach was not utilized. More specifically the Applicants would like to compare the results of Examples 1 and 2 of the present application with the results shown for the sample fourth from left in Table 1D (hereinafter "sample 4L") of Rosenquist. These samples are similar in composition since they all possess 0.1 phr of KPFBS and 0.1 phr of the cyclic siloxane as well as 0.35 wt% of the pentaerythritol stearate (PETS). Example 1 and sample 4L, both are prepared without utilizing the concentrate approach and are therefore comparative examples, while Example 2 represents the claimed invention. The results shown for haze in Example 1 and 4L (both 3.2 mm samples) are 1.6 and 2.7 respectively, while that for Example 2 is 0.7, which represents an improvement of 56% over Example 1 and 74% over Example 2. All the other comparable properties such as the flame retardancy, and the like, are almost identical for the compositions contained in the present application as well as those in Rosenquist. Thus, the sample made utilizing the concentrate approach, i.e., Example 2, clearly shows superior characteristics in at least one property over samples made utilizing the approach detailed in Rosenquist, which does not involve manufacturing and using a concentrate.

In summary, as shown above, the sole addition of a cyclic siloxane to a polycarbonate does not improve the flame retardant properties of the polycarbonate, but rather reduces the value of other desirable properties such as the softening temperature, and therefore one of ordinary skill in the art would not be motivated to add it to a composition where the main desired property was flame retardancy. However, in adding the cyclic siloxane to a flame retardant composition as shown in Rosenquist, unexpectedly superior flame retardant properties were obtained. The present application shows that the use of the flame retardant in a concentrate form produces haze results that are substantially superior to those detailed in Rosenquist as well as the comparative examples of the present application where the concentrate approach was not utilized. In this regard the courts have stated "A greater than expected result is an evidentiary factor pertinent to the legal conclusion of obviousness ... of the claims at issue." *In re Corkhill*, 711 F.2d 1496, 226 USPQ 1005 (Fed. Cir. 1985). Since,

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as prescribed by the courts, there cannot be a legal conclusion of obviousness, Applicants therefore request a withdrawal of the rejection over Ogoe, Ogoe '479 or Buysch in view of Mark.

It is believed that the foregoing remarks fully comply with the Office Action and that the claims herein should now be allowable to Applicants. Accordingly, reconsideration and allowance is requested.

If there are any additional charges with respect to this response or otherwise, please charge them to Deposit Account No.07-0862 maintained by Assignee.

Respectfully submitted,

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